WHAT IS CLAIMED IS:

1. An automatic voltage regulator of a generator which regulator keeps an output voltage at a predetermined voltage by controlling exciting currents of said generator with turning a switching device on and off depending on a pulse width, the regulator comprising:

a voltage detection means for detecting the output voltage of said generator;

a deviation calculation means for calculating a deviation for a target voltage with respect to a detected detection voltage;

an integral-value calculation means for calculating an integral value of said deviation;

a pulse signal calculation means for calculating said pulse width based on an integral coefficient, a proportional coefficient, said deviation, and the integral value of said deviation, and for outputting said pulse width as a pulse signal; and

a function for suppressing an overshoot,

wherein when before voltage establishment said detection voltage is less than a first reference voltage lower than said set voltage, said target voltage is replaced with a second reference voltage that is not less than said first reference voltage and less than said set voltage;

wherein when before voltage establishment said detection voltage is not less than said first reference voltage, said target voltage is replaced with said set voltage; and

wherein said switching device inputs said pulse signal calculated by said pulse signal calculation means as a signal of said pulse width.

2. An automatic voltage regulator of a generator which regulator keeps an

output voltage at a predetermined voltage by controlling exciting currents of said generator with turning a switching device on and off depending on a pulse width, the regulator comprising:

a voltage detection means for detecting the output voltage of said generator;

a deviation calculation means for calculating a deviation for a target voltage with respect to a detected detection voltage;

an integral-value calculation means for calculating an integral value of said deviation;

a pulse signal calculation means for calculating said pulse width based on an integral coefficient, a proportional coefficient, said deviation, and the integral value of said deviation, and for outputting said pulse width as a pulse signal; and

a function for suppressing an overshoot,

wherein when after voltage establishment the generator is judged to be in a load short-circuit condition and a heavy load application condition, said pulse width is fixed at all conductive condition, the integral value of said deviation is made zero by said integral value calculation means, and said target voltage is replaced with a third reference voltage that is not less than said detection voltage and less than said set voltage;

wherein when after voltage establishment the generator is in a load short-circuit condition and a heavy load application condition and said detection voltage is not less than said target voltage, said target voltage is replaced so as to increase in incremental steps for every predetermined value until said target voltage reaches said set voltage;

wherein when after voltage establishment said target voltage reaches

said set voltage, said target voltage is replaced with said set voltage; and

wherein said switching device inputs said pulse signal calculated by said pulse signal calculation means as a signal of said pulse width.

3. An automatic voltage regulator of a generator which regulator keeps an output voltage at a predetermined voltage by controlling exciting currents of said generator with turning a switching device on and off depending on a pulse width, the regulator comprising:

a voltage detection means for detecting the output voltage of said generator;

a deviation calculation means for calculating a deviation for a target voltage with respect to a detected detection voltage;

an integral-value calculation means for calculating an integral value of said deviation;

a pulse signal calculation means for calculating said pulse width based on an integral coefficient, a proportional coefficient, said deviation, and the integral value of said deviation, and for outputting said pulse width as a pulse signal; and

a function for suppressing an overshoot,

wherein when before voltage establishment said detection voltage is less than a first reference voltage lower than said set voltage, said target voltage is replaced with a second reference voltage that is not less than said first reference voltage and less than said set voltage;

wherein when before voltage establishment said detection voltage is not less than said first reference voltage, said target voltage is replaced with said set voltage;

wherein when after voltage establishment the generator is judged to be

in a load short-circuit condition and a heavy load application condition, said pulse width is fixed at all conductive condition, the integral value of said deviation is made zero by said integral value calculation means, and said target voltage is replaced with a third reference voltage that is not less than said detection voltage and less than said set voltage;

wherein when after voltage establishment the generator is in a load short-circuit condition and a heavy load application condition and said detection voltage is not less than said target voltage, said target voltage is replaced so as to increase in incremental steps for every predetermined value until said target voltage reaches said set voltage;

wherein when after voltage establishment said target voltage reaches said set voltage, said target voltage is replaced with said set voltage; and

wherein said switching device inputs said pulse signal calculated by said pulse signal calculation means as a signal of said pulse width.

4. An automatic voltage regulator of a generator with a function for suppressing an overshoot according to claim 1,

wherein when before voltage establishment said detection voltage is less than said first reference voltage, said pulse signal calculation means replaces said proportional coefficient with a modified proportional coefficient substantially smaller than a set value and calculates said pulse width by making said deviation zero.

5. An automatic voltage regulator of a generator with a function for suppressing an overshoot according to claim 3,

wherein when before voltage establishment said detection voltage is less than said first reference voltage, said pulse signal calculation means replaces said proportional coefficient with a modified proportional coefficient

substantially smaller than a set value and calculates said pulse width by making said deviation zero.

6. An automatic voltage regulator of a generator with a function for suppressing an overshoot according to any one of claims 1 to 5 which regulator comprises a differential value calculation means for calculating a differential value of said deviation,

wherein said pulse signal calculation means further calculates said pulse width using a differential coefficient and the differential value of said deviation.